1/2 023 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--FEATURES OF ACRYLONITRILE POLYMERIZATION INITIATED WITH TRIETHYLPHOSPHINE IN TETRAHYDROFURAN AND DIMETHYLFORMAMIDE -U-

AUTHOR-(04)-KOCHETOV, E.V., BERLIN, A.A., MASALSKAYA, E.M., YENIKOLOPYAN, N.S.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(5), 1118-26

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ACRYLONITRILE, POLYMERIZATION, AMIDE, CHEMICAL REACTION KINETICS, PHOSPHATE ESTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1375 STEP NO--UR/0459/70/012/005/1118/1126

CIRC ACCESSION NO--AP0135049

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE---11DEC70

CIRC ACCESSION NO--AP0135049

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYMN. KINETICS OF H SUB2 C:CHCN (I) IN HCONME SUB2 (II) OR TETRAHYDROFURAN (III) SOLNS. CONTG. ET SUB3 P WERE STUDIED. THE POLYMN. FOLLOWED 1ST ORDER KINETICS IN RESPECT TO ET SUB3 P AND 2ND ORDER IN RESPECT TO I IN II SOLN. THE MOL. WT. OF THE POLYMER DECREASED WITH CONVERSION, WAS INDEPENDENT OF ET SUB3 P CONCN., AND INCREASED LINEARLY WITH INCREASING I CONCN. IN II OR WITH THE SQUARE OF I CONCN. IN III SOLN. THE INITIATION RATE CONST. INCREASED WITH INCREASING I CONCN. IN III. . . . FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

USSR

UDC: 621.375.024(088.8)

ZELENTSOV, B. I., MASAL'SKAYA, O. K.

"A Push-Pull Demodulator for a Type MDM DC Amplifier"

USSR Author's Certificate No 261467, filed 1 Aug 68, published 22 May 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D141 P)

Translation: Medium-power transistors which withstand comparatively low inverse voltages are used in DC amplifiers with double conversion (type MDM). In the absence of current, these transistors may be easily overloaded, which means they must be used at the limit, thus reducing reliability. To make the distribution of inverse voltages more uniform, the transistor of each converter in an arm in the proposed demodulator is loaded by its own diode bridge, and these bridges are connected in series to a common load. E. L.

1/1

USSR

UDC: 621.396.6.002:621.793

MASALYKINA, V. I.

"Treatment of Articles Before Coating in a Melt"

Elektron. tekhnika. Nauchno-tekhn. sb. Tekhnol. i organiz. proiz-va (Electronic Technology. Scientific and Technical Collection. Technology and Organization of Production), 1970, vyp. 4 (36), pp 127-128 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V260)

Translation: The proposed method of pretreatment consists in degreasing in a melt of NaOH (65%) + $NaNO_3$ (30%) + NaCl (5%) at 450-500°C for 1-3 minutes with subsequent washing in hot and cold water, etching in concentrated HCl at room temperature, and rewashing in cold water. All operations are carried out on an automatic production line made up of nine tanks arranged in sequence with programmed control. Use of the described treatment increased the yield of usable components after tinning to 99-100 percent, simplified the technological process and improved working conditions. N. S.

1/1

USSR

UDC 575.595.773.4

KAMINSKAYA, E. A., MASE, I. B., and FREYMANIS, Ya. F.

"Effect of Indene Preparations on the Genetic Effect of Different Energy Radiations"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Biologicheskikh Nauk, No 1, 1971, pp 42-46

Abstract: The hypothesis that the protective capacity of indene preparations with respect to genetic disorders induced by high-energy radiation is inversely proportional to the increase in the ion density of radiation was tested. Drosophila melanogaster was irradiated with x-rays and electrons with energies of 42 Mev. Five indene preparations known as F-38, F-11, F-44, F-25, and AV-69 were applied in maximum concentrations not affecting the normal development of Drosophila. Two tests were carried out, test one to establish the frequency of recessive sex linkage with lethal mutations, and test two -- to determine the frequency of chromosome aberrations. The results of the tests established

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USSR

KAMINSKAYA, E. A., MASE, I. B. and FREYMANIS, Ya. F., Izvestiya Akademii Nauk BSSR, Seriya Biologicheskikh Nauk, No 1, 1971, pp 42-46

that, contrary to claims in the literature, the protective effectiveness of indene preparations decreases when radiation energy is increased, while increased sensitivity is manifested in some cases.

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UNCLASSIFIED PROCESSING DATE--20NOV70

1/2 013

TITLE--HYDROGEN CYANIDE EXHALATIONS IN COKING PLANTS --U--

AUTHOR--MASEK, V.

COUNTRY OF INFO--USSR

SOURCE--PRAC. LEK. 1970, 22(2), 50-4

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--COKE, CHEMICAL PLANT, HYDROGEN CYANIDE, WASTE DISPOSAL SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1713 STEP NO--CZ/0106/70/022/002/0050/0054

CIRC ACCESSION NO--AP0115542

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--20NOV70

2/2 013

CIRC ACCESSION NO--AP0115542

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AV. CONCNS. OF HCN IN WASTE GASES AND WATERS WERE DETD. IN VARIOUS PHASES OF THE COKING PROCESS WITH HIGHEST VALUES 160 GAMMA-L. DURING THE DISCHARGE OF SLUDGE DEPOSITS. SOME PREVENTIVE MEASURES ARE RECOMMENDED INCLUDING THE INTRODUCTION OF NEW SCRUBBERS, ABSORBERS, DESULFURIZATION BATTERIES, ETC.

FACILITY: VYZK. USTAV NOVA HUT, OSTRAVA-KUNCICE, CZECH.

UNCLASSIFIED

JPRS 59208

6-73

MASENKO, B.N.

VII-6. GROWTH OF EPITAXIAL LAYERS OF GALLIUM ARSENIDE FOR THE MANUFACTURE OF GUNN DIODES

[Article by E. S. Gudz, L. Ye. Maromchuk, B. N. Masenko, Yu. G. Fuksov, L. A. Khodyko, A. M. Tuzovskiy, Svetlovodsk; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 93]

The basic requirements on Gallium arsenide layers used to manufacture Gunn effect devices are formulated. The layers are grown by the gas transport in the $Ga-AsCl_3-H_2$ system. From analysis of the basic stages of growth of the layers in this process and the experimental results, the conclusion is drawn that the reproducibility of the parameters of the layers arises primarily from the quality of treating the surface of the substrates and the processes in the source zone.

A study was made of various versions of etching the substrates in the gas phase, and the regime was selected which permits the surface to be obtained with class 14 finish after gas etching. A detailed analysis was made of the processes in the source zone, and the saturation time of the source was calculated on the basis of the proposed model of the formation of a thin layer of gallium arsenide on the source. A study was made of the characteristic features of obtaining the n-n$^+$-epitaxial structures. Epitaxial layers were obtained with $n = 10^{14}$ to 10^{15} cm^{-3} and μ mobility of $\mu = 30,000$ cm^2/vsec at 77° K not containing unevennesses greater than 0,3 microns in an area of 3 cm^2.

JPRS 57068
6-73

7

XIII-6. EFFECT OF THE SUBSTRATE ORIENTATION ON THE GROWTH AND PROPERTIES OF EPITAXIAL LAYERS

[Article by S. A. Grushkov, F. P. Kesamanly, V. F. Kovalenko, I. Ye. Maronchuk, B. P. Masenko, V. I. Orel, A. M. Tuzavskiy, Svetlovodsk; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 123]

The epitaxial layers of solid solutions of $Al_xGa_{1-x}As$, Ga, P_xAs_{1-x} were grown from a solution in a gallium melt in a hydrogen flux on gallium arsenide plates with an orientation of 100, 111B, 111A and on the 100 planes disoriented to 111B by 3° and 10°.

The effect of the orientation plane on the growth rate, morphology, electrical parameters and photoluminescence intensity was investigated. The layers most improved with respect to morphology were obtained on singular planes. The distribution of the composition in the $Al_xGa_{1-x}As$ layers with respect to thickness is observed as a function of the substrate orientation plane. The most uniform layers were obtained for growth on substrates oriented in the 111B plane. In pure layers of $Al_xGa_{1-x}As$ with a concentration of less than $5 \cdot 10^{15}$ cm^{-3}, a deep level is observed (for example, for x = 0.3 the activation energy of the level E = 0.12 electron volts). On the basis of the layers of solid solutions of $Al_xGa_{1-x}As$, GaP_xAs_{1-x} obtained, like diodes were manufactured with a brightness to 1,000 nt for a current of 10 milliamps.

MASENKO, B.P.

Acc. Nr: AP0046561 Abstracting Service: INTERNAT. AEROSPACE ABST Ref. Code: 5-70 21R0030

A70-25128 # New Soviet cameras for photographic observation of artificial celestial bodies (Novye Sovetskie kamery dlia fotonabliudenii iskusstvennykh nebesnykh tel). A. G. Masevich and A. M. Lozinskii, *Akademiia Nauk SSSR, Vestnik*, vol. 40, Feb. 1970, p. 38-44. In Russian.

Discussion of three photographic cameras developed in the USSR for satellite observations and satellite geodesy. Particular attention is given to the AFU-75 camera employed at the Riga, Uzhgorod, Zvenigorod, and Yuzhno-Sakhalinsk stations. The AFU-75 has a lens diameter of 210 mm, and a focal length of 736 mm. The Uran-16 seven-element lens has a d/f ratio of 1:3.5. The field is 10 by 14 deg. The film width is 190 mm. The camera is mounted on a special equatorial platform and employes a guiding telescope. It is suitable for photographing satellites of stellar magnitudes from 3 to 10. Another camera developed and employed at the Riga University Observatory is the FAS camera designed for photographing active satellites. Its mounting and principles of operation are the same as those of the AFU-75. Its spherical mirror lens is 300 mm in diameter, the focal length 480 mm, d/F is 1:1.9,

REEL/FRAME
19781824

AP0046561

the film (or plate) 6.5 by 9 cm, the field 7 by 10 deg. The FAS camera has been installed late in 1969 at the stations at Riga, Zvenigorov, Uzhgorod, Pulkovo, and Yuzhno-Sakhalinsk. The largest of the cameras described, the VAU, was developed in Moscow for satellite tracking. It employs the Astrodar lens (developed in 1958). The primary mirror is 1070 mm in diameter, the focal length 700 mm, the film width 70 mm, the picture format 60 by 360 mm. The camera employs a triaxial parallactic mounting that makes it possible to obtain reference stars in the form of points in direct proximity of the satellite image.

V.P.

19781825

USSR UDC 629.12.037.23.001.5

BLYUMIN, V. I., MASEYEV, M. B.

"Experimental Studies of Propellors With a Rotating Duct"

Leningrad, Sudostroyeniye, No. 3, Mar 72, pp 8-12

Abstract: The principle in the interaction of a rotating duct with the propellor and the reason for the rise in thrust in it are said to be the same as in a fixed duct. It is claimed that a rotating duct does not have several of the disadvantages of a fixed duct but it does have a fundamental hydrodynamic shortcoming in the expenditure of additional power on overcoming forces of resistance caused by its rotation. Its diameter is ordinarily kept less than the diameter of the propellor to lower the power expenditures on rotation of the duct. The following conclusions were drawn from the study: high-load and low-revolution propellors with a shaped rotating duct are more advantageous as regards propulsion efficiency than propellors without a duct. A symmetric aviation profile of the NACA-0015 type should be used as a profile for the rotating duct. The optimal diameter of the duct is in the range $D_{duct} = 0.5\text{-}0.7\ D$. The efficiency of a propellor-rotating duct unit can be raised by installing additional

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USSR

BLYUMIN, V. I., MASEYEV, M. B., Sudostroyeniye, No. 3, Mar 72, pp 8-12

external blades. The application of rotating ducts is called for when the installation of a fixed duct on the body of the vessel is impossible, or makes only a small improvement as, for example, for propellors located in a deep tunnel. In addition, a rotating annular duct raises the strength of the propellor blades, making it possible to use thin blades with higher efficiencies and better cavitation characteristics.

USSR

UDC: 532.555 4

MASEYEV, M. V., MAZO, I. S.

"A Dynamic and Static Pressure Gauge"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar 72, Author's Certificate No 328476, Division G, filed 16 Apr 70, published 9 Feb 72, p 179

Translation: This Author's Certificate introduces a dynamic and static pressure gauge made in the form of a tube with convergent input channel. A Pitot tube is located in the flow section of the gauge tube, and there is an opening in the flow section for takeoff of static pressure. As a distinguishing feature of the patent, the device is designed for improved precision in measuring pressure in an abloique flow over a range of up to ±40° in cavitationless liquid flow and at subsonic velocities in air. The outer surface of the tube with convergent channel input is streamlined, and a sharp trailing edge is formed where the outer surface intersects with the inner cylindrical surface at the end. The flow cross section of this tube is identical from beginning to end in its cylindrical part.

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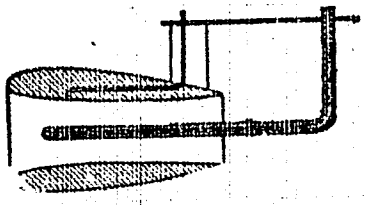
USSR

MASEYEV, M. V., MAZO, I. S., USSR Author's Certificate No 328476



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USSR UDC: 621.376:530.145.6:621.376

KLYUYEV, V. P., MASH, D. I., MOROZOV, V. V., MIKOGOSYAN, D. N., ORAYEVSKIY, A. N.

"Detection of Infrared Emission by Shifting it to the Visible Range"

Kratk. soobshch. po fiz. (Brief Reports on Physics), 1970, No 5, pp 38-42 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D459)

Translation: An experimental investigation was made into the possibility of detecting weak infrared radiation by shifting it in a nonlinear crystal ($LiNbO_3$) with a powerful pulse of emission from an argon laser. The installation used was sufficiently sensitive to create a nonlinear infrared spectrometer; it is assumed that such a spectrometer can produce broadening of the order of 1 Å. Two illustrations, bibliography of twelve titles. N. S.

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1/2 008 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--ON THE POSSIBLE MECHANISM OF PACHINI BODIES EXCITATION -U-

AUTHOR-(03)-CHERNIGOVSKIY, V.N., MASHANSKIY, V.F., MIRKIN, A.S.

COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 2, PP 214-223

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NERVE, EXCITED STATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0948 STEP NO--UR/0216/70/000/002/0214/0223

CIRC ACCESSION NO--AP0109105

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201930008-6"

2/2 008 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0109105

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ROLE OF BIOPHYSICAL AND ULTRASTRUCTURAL PECULIARITIES OF THE PACHINI BODIES AND THE MECHANISM OF THEIR EXCITATION ARE DISCUSSED. THE NEWLY DISCOVERED EFFECT OF BIOMECHANICAL RESONANCE IS COMPARED WITH THE PRESENCE OF ACTIVE SITES OF THE RECEPTIVE SURFACE OF THE NERVE TERMINATION. A MODEL OF A POSSIBLE MECHANISM OF THE APPEARANCE OF EXCITATION IN MECHANORECEPTORS IN THE PACHINI BODIES IS PROPOSED. FACILITY: I. P. PAVLOV INSTITUTE OF PHYSIOLOGY, ACADEMY OF SCIENCES USSR INSTITUTE OF CYTOLOGY, ACADEMY OF SCIENCES USSR.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--QUANTITATIVE DETERMINATION OF CARBOHYDRATE IN THE PRESENCE OF A PROTEIN -U-
AUTHOR--MASHARINA, L.V.

M

COUNTRY OF INFO--USSR

SOURCE--LAB. DELO 1970, (2), 117-18

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--CARBOHYDRATE, COLORIMETRIC ANALYSIS, PROTEIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0009 STEP NO--UR/9099/70/000/002/0117/0118

CIRC ACCESSION NO--AP0120709

UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120709

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MODIFIED METHOD WITH ALPHA NAPHTHOL HAS BEEN DEVELOPED WHICH CONSIDERABLY SHORTENS THE TIME FOR ANAL. TO 0.25 ML OF CARBOHYDRATE SOLN. IN REDISTD. WATER IS ADDED 3 ML OF CONCD. H SUB2 SO SUB4. AFTER MIXING, THE SOLN. IS ALLOWED TO STAND FOR 15 MIN. THEN 0.1 ML OF AN ETHANOLIC 0.1PERCENT SOLN. OF ALPHA NAPHTHOL IS ADDED AND THE MIXT. IS KEPT IN THE DARK FOR 2 HR. THE COLOR IS READ AT 570 M MU. THE INFLUENCE OF A NO. OF PROTEINS (INSULIN, TRYPSIN, HUMAN PLASMA ALBUMIN, CHYMOTRYPSINOGEN, AND RNASE) ON THE ACCURACY WAS NEGLIGIBLE. FACILITY: BIOL.-NOCHV. FAK., MOSK. UNIV. IM. LOMONOSOVA, MOSCOW USSR.

UNCLASSIFIED

USSR

ZINOV'YEV. V. YE.. MASHAROV. S. I.. GEL'D. P. V.

"Kinetic Properties of Rhenium at High Temperatures"

Leningrad, Fizika Tverdogo tela, Vol 15, No 4, 1973, pp 1281-1284

Abstract: The thermal properties of rhenium were studied previously up to 2,400° K [A. V. Arutyunov, L. P. Filippov, TVT, No 8, 1095, 1970]. In the present article a study has been made of the coefficient of thermal diffusivity of rhenium in the temperature range from 850 to 3,000-3,200° K. The measurements were performed on a monocrystalline specimen containing about 99.99% Re which were cut perpendicular to the [10$\bar{1}$0] axis and were 5 × 5 × 0.3 mm in size. The coefficient of thermal diffusivity was determined by the method of plane thermal waves [V. Ye. Zinov'yev, R. P. Krentsis, P. V. Gel'd, TVT, No 6, 927, 1968; L. P. Gel'd, V. Ye. Zinov'yev, TVT, No 10, 656, 1972] at a frequency of 168.8 hertz in a vacuum of $5 \cdot 10^{-6}$ mm Hg. The plotted data indicate that the thermal diffusivity of rhenium decreases weakly with temperature. The coefficient of thermal conductivity and the electron component of the thermal conductivity were calculated and also plotted. The increase in the coefficient of thermal conductivity comes from the electron component at the same time as the lattice component $\lambda_g = \lambda - \lambda_e$ decreases with temperature. By comparison with other transition metals λ_g in rhenium is quite large.

1/2 The interpretation of the kinetic properties of Re and its alloys with

USSR

ZINOV'YEV, V. YE., et al., Fizika Tverdogo Tela, Vol 15, No 4, 1973, pp 1281-1284

Mo based on the ordinary Mott model encounters significant difficulties. The Fermi surface of rhenium is also very complicated, but it is noted that alloying of the metal with small groups can lead to a dual situation: 1) the temperature dependence of ρ remains the same as for the pure metal if the small groups do not disappear or reoccur; 2) if the states with the small groups disappear (or turn out to be completely filled), the resistance will be described by a simple relation of the type of $\rho = \rho_0 + AT$ where A is the constant, ρ_0 is the resistance caused by elastic scattering on the admixtures.

It is suggested that this may be the situation in alloys of rhenium with molybdenum and tungsten.

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USSR

UDC 541.183

MASHAROV, S. I., Ural State University Imeni A. M. Gor'ki

"Adsorption of Gasses by Binary Ordered Alloys"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1135-1138

Abstract: Characteristics of gas adsorption in binary ordered alloys have been examined with an assumption that the absorption takes place only on the surface layer. It has been found that at low gas pressure at the phase transition point: order-disorder, of the first type, a staggered increase of the quantity of adsorbed material takes place; on the basis of this jump the energy of the bond between the adsorbed atom and alloy atoms may be determined experimentally. In case when the phase conversion in the alloy is the second type of transition, a bend is observed on the adsorption isobar at the point of transition. At high pressures adsorption saturation takes place.

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USSR

Adsorption

UDC 66.071.71

USSR

ASTAKHOV, V. A., DUBININ, M. M., MASHAROVA, L. P., and ROMANKOV, P. G., Belorussian Technological Institute Imeni S. M. Kirova, Institute of Physical Chemistry, Academy of Sciences SSSR, and Leningrad Technological Institute imeni Lensoveta

"Calculation of the adsorption Equilibrium on Chemically and Structurally Different Adsorbents"

Moscow, Teoreticheskiye Osnovy Khimicheskoy Tekhnologii , Vol 6, No 3, 1972, pp 373-379

Abstract: A statistical method is discussed for the analysis of adsorption isotherms relative to choosing the most accurate distribution function for engineering calculations. Equations for the Poisson, Gaussian, and the Veibul [transliterated] distrubution curves are given [eqs. 1, 2, and 3 respectively] and the mathematical implications of each considered. The veibul equations seem to be the simpliest, the most general and the most amenable to engineering applications.

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USSR

ASTAKHOV, V. A., et al., Teoreticheskiye Osnovy Khimicheskoy Tekhnologii, Vol 6, No 3, 1972, pp 373-379

$$F(\alpha) = 1 - \exp[-m\alpha] \sum_{p=0}^{n-1} \frac{1}{p!} (m\alpha)^p \qquad (1)$$

$$F(\delta) = \operatorname{erf}(\alpha) = \frac{1}{\sigma\sqrt{2\pi}} \int_0^{\alpha} \exp\left[-\frac{(\delta - \delta_0)^2}{2\sigma^2}\right] \qquad (2)$$

$$F(\delta) = 1 - \exp[-\delta^n] \qquad (3)$$

2/2

USSR

UDC 621.372.6

VORONIN, N. YA., MASHARSKIY, YE. I., Active Members of the Scientific and Technical Society of Radio Engineering, Electronics, and Communications

"Resistance Matrices of Connected Nonuniform Symmetric Band Lines"

Moscow, Radiotekhnika, Vol 26, No 10, 1971, pp 84-87

Abstract: On the basis of the paper by Yamomoto, et al.["Microwave Theory and Technology," Trans. IEEE, No 4, 220-231, 1967], formulas are derived for the resistance matrix elements of connected exponential, parabolic and hyperbolic nonuniform band symmetric lines. The resistance matrices obtained offer the possibility of calculating the required parameters of filters and directional couplers based on connected exponential, parabolic and hyperbolic symmetric band lines.

1/1

USSR UDC: 621.372.852.1(088.8)

LYAVDANSKIY, S. Ye., MASHARSKIY, Ye. I., KRAVCHENKO, A. T., Novosibirsk Electrical Engineering Institute

"A Band Filter for Vacuum-Tube Amplifiers"

USSR Author's Certificate No 266098, filed 6 Jul 68, published 28 Jul 70 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D70 P)

Translation: A filter is proposed which consists of a plate circuit to which a load circuit is coupled. To reduce the size and extend the range of coupling control between circuits, the plate circuit is made in the form of a half-wave section of coaxial line loaded at one end by the output capacitance of the tube, and open at the other end, with increase in wave impedance on the quarter-wave section closest to the tube. The load circuit is made in the form of a quarter-wave section of coaxial line with shorting piston at the end. Coupling between the ends of the tank is regulated by moving the inner conductor of the load circuit along the common shield of the tank circuits.

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USSR

UDC: 621.372.413:621.372.2

MASHARSKIY, Ye. I.

"Parameters of an Oscillatory Circuit Made up of a Shorted Section of Shielded Coaxial Line With an Inner Helical Conductor Loaded by the Output Capacitance of a Tube"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 1, pp 113-118 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6B164)

Translation: Relationships are derived for calculating the basic parameters of the circuit described in the title, taking equivalence of a coaxial and a symmetric strip line as a point of departure. The accuracy of the relationships is confirmed by experimental data. Two illustrations, bibliography of four titles. N. S.

1/1

USSR

UDC: 621.372.413:621.372.2

VORONIN, M. Ya., MASHARSKIY, Ye. I.

"Equivalent Capacity of a Tank Circuit Made of a Section of Strip Line"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 1, pp 99-112 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6B163)

Translation: The authors calculate the equivalent capacity of oscillatory systems made up of sections of nonhomogeneous exponential, parabolic and hyperbolic lines loaded by the input capacitance of a tube. The advantages of these systems over those made up of sections of homogeneous line are pointed out. Nine illustrations, bibliography of seven titles. N. S.

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USSR

UDC 621.646.4

BIRMAN, A. I., ZAKATOV, V. P., KOLOYDENKO, A. L., MASHBITS, A. V., and POTEPALOV, Yu. N., Central Scientific Research Institute of Large-Scale Automation and Special Design Office for Automation in Petroleum Refining and the Petrochemical Industry

"Pneumatic Long-Term Memory Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 28, 1971, p 199

Abstract: USSR Authors' Certificate No 315183 (Cl. G 06g 5/00), filed 4 January 1970, issued 21 September 1971, covers a pneumatic long-term memory device containing an oscillator and a cathode follower and two pulsating capacitances with a control and a working cavity in each, connected to the oscillator through contacts. In order to reduce temperature error, the control cavities of the capacitances, filled with a liquid with a low coefficient of temperature expansion, are interconnected through a contact; the working cavity of one capacitance is connected with the cathode follower input and with input and reference pressure sources through contacts; and the working cavity of the second capacitance is connected via contacts to the reference pressure source and the atmosphere.
1/1

USSR UDC: 621-525

LEYENSON, F. G., MASHBITS, A. V., Special Design Office on Automation in Petroleum Refining and Petrochemistry

"A Pneumatic Device for Determining the Extrema of Functions"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 48, Dec 73, Author's Certificate No 409231, Division G, filed 26 May 72, published 30 Nov 73, p 118

Translation: This Author's Certificate introduces a pneumatic device for determining the extrema of functions. The device contains a circuit comprised of a unit for storage of the maximum connected in series with a null indicator and a pulser. The unit for storage of the maximum is also connected to the input and output channels and is based on two series-connected repeaters with a shift. The output of the first repeater is connected through a normally open contact to a reset line. As a distinguishing feature of the patent, the measurement range of the device is extended by adding an inverter and a second series circuit made up of a unit for storage of the maximum, a null indicator, and a pulser. The additional unit for storage of the maximum is connected through the inverter to the output

USSR

LEYENSON, F. G., MASHBITS, A. V., USSR Author's Certificate No 409231

channel. The output of the pulser in the first series circuit is connected to the controlling input of the normally open contact of the reset line of the unit for storage of the maximum in the second circuit, and the output of the pulser in the second series circuit is connected to the controlling input of the normally open contact of the reset line of the unit for storage of the maximum in the first circuit.

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UDC: 681.325.53-525

USSR

ZAKATOV, V. P., ZELIKMAN, A. M., LEYENSON, F. G., MASHBITS, A. V., PODOL'NYY, V. A., Special Design Office for Automation in Petroleum Refining and Petrochemistry

"A Converter Which Changes a Pneumatic Analog Signal to a Number of Pulses"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 1, Jan 71, Author's Certificate No 289415, division G, filed 28 Mar 69, published 8 Dec 70, pp 161-162

Translation: This Author's Certificate introduces a converter which changes a pneumatic analog signal to a number of pulses. The device contains a pulsating choke, a pulse generator which controls the contacts of the pulsating choke, and a pressure differential controller. As a distinguishing feature of the patent, the precision with which an input pneumatic signal is converted to a pulse number is improved by making the pressure differential controller in the form of a pulsating vessel whose controlling chamber is connected through contacts to the output channels of sources of zero-level pressure and controlling pressure. The working chamber of the pulsating vessel is connected through contacts to the cavities of input and output pulsating chokes. The cavity of the input choke is connected

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ZAKATOV, V. P., et al., USSR Author's Certificate No 289415

through a contact to the input pressure line, and the cavity of the output choke is connected through a contact to the zero-level pressure source and directly to the output repeater.

USSR

UDC: 8.74

DOVGOPOLYY, V. G., KALAYDA, Ye. I., KONOZENKO, V. I., MASHBITS, G. Ya., NIKITIN, A. I.

"Principles of Adjusting an Operational System for a Variable Set of Equipment, and the Number of Solvable Problems"

Kiev, Konstruirovaniye i vnedreniye novykh sredstv vychisl. tekhn.--sbornik (Designing and Introducing New Computer Facilities--collection of works), t. 1, 1971, pp 91-94 (from RZh-Kibernetika, No 7, Jul 73, abstract No 7V639)

Translation: Rapid and effective alignment of an operational system for a certain set of equipment and the necessary number of problems to be handled is one of the most urgent and most complicated problems of systems programming. This paper describes methods of solving some aspects of this problem; these procedures have been used in developing an operational system for the "Dnepr-2" computer. An operational system of modular structure was used as the basis of these methods (see Ye. I. Kalayda, V. I. Konozenko, G. Ya. Mashbits, A. I. Nikitin, "Konstruirovaniye i vnedreniye novykh sredstv vychisl. tekhn.", t. 1, pp 94-96).

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USSR

KALAYDA, Ye. I., KONOZENKO, V. I., MASHBITS, G. Ya., NIKITIN, A. I.

"Some Problems of Systems Programming Arising with Modular Organization of an Operational System"

Konstruirovaniye i vnedreniye novykh sredstv vychisl. tekhn. T. 1 [Design and Introduction of New Computer Equipment. Volume 1 -- Collection of Works], Kiev, 1971, pp 94-98 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V639 by V. Ostrovskiy)

Translation: Certain methods of systems programming used by the authors in the development of the DD-3 operational system for the Dnepr-2 computer are presented. Attention is drawn to the fact that the success of development of an OS depends to a great extent on making of the proper decisions in such problem areas as: efficient organization of the program; revision of system expandability; special approaches for combined debugging; methods for automatic OS generation. The authors feel that the key to the solution of these problems lies in modular organization of the system. In this connection, a general description of the structure and process of functioning of standard modules used in the development of DD-3 is presented.

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USSR

KALAYDA, Ye. I., KONOZENKO, V. I., MASHBITS, G. Ya., NIKITIN, A. I.
Konstrunrovaniye i vnedreniye novykh sredstv vychisl. tekhn. T. 1, Kiev, 1971, pp 94-98

The modular organization of the OS allowed a mean productivity of 8 to 10 instructions per day per programmer to be achieved in the period of writing and debugging of the main portion of DD-3 (approximately 10,000 instructions), and is recommended by the authors for use in developing of large programming systems for computers.

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USSR UDC 681.3.06.51

KONOZENKO, V. I. , MASHEITS, G. Ya., NIKTIN, A. I.

"The DD-3 Supervisory Program for the Dnepr-2 Computer"

1-YA Nauchno-tekhn. Konferentsiya Spets. Konstrukt. Byuro Mat. Mashin i Sistem [First Scientific and Technical Conference of the Special Design Bureau for Mathmatical Machines and Systems -- Collection of Works], Kiev, 1970, pp 66-77 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4V666).

Translation: DD-3 is a development of the DD-1 and DD-2 supervisory programs and is designed for use in automatic production control systems and physical experiment automation systems using the Dnepr-2 computer. Furthermore, DD-3 is the basic supervisory program for the communications machines of multimachine complexes operating both in the computing and control modes. DD-3 allows three types of external organization of the computer process: 1) a process closed for a technical or technological object and occurring in real time; 2) a process closed for a consumer (operative reception of information for production, dialogue with programmer during debugging of programs); 3) separate (with respect to consumer) process with packet program running.

USSR

UDC: 681.327

BLAZHKO, S. S., ZASLAVSKIY, R. I., KALAYDA, Ye. I., MASHBITS, B. Ya., KUKHARCHUK, A. G., NIKITIN, A. I., Institute of Cybernetics of the Academy of Sciences of the UkrSSR, and Electronic Computer and Control Computer Plant

"A Device for Data Transmission From the Input Unit to the Memory in a Digital Computer"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 30, Oct 71, Author's Certificate No 317056, Division G, filed 27 Jun 69, published 7 Oct 71, p 172

Translation: This Author's Certificate introduces a device for data transmission from the input unit to the memory in a digital computer. The device contains a data address counter and a symbol register. As a distinguishing feature of the patent, program processing of words is simplified by including a balance circuit, a word symbol counter, a pattern address counter, an initial pattern address register, a space symbol decoder, and a zero decoder for the word symbol counter. The first output of the balance circuit is connected to the input of the data address counter, the second output is connected to the input of

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BLAZHKO, S. S. et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 30, Oct 71

the word symbol counter, and the third output is connected to one input of the pattern address counter. Connected to the other input of the pattern address counter is the output of the initial pattern address register. The first input of the balance circuit is connected to the output of the space symbol decoder, whose input is connected to the output of the symbol register. The second input of the balance circuit is connected to the output of the word symbol counter, and the third input of the balance circuit is connected to the output of the zero decoder for the word symbol counter. The zero decoder input is connected to the output of the word symbol counter.

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USSR

UDC: 538.56:519.2[illegible]

DERYUGIN, I. A., KURASHOV, V. N., and MASHCHENKO, A. I.

"Optimizing Detection Systems of Quasiclassical Optical Signals"

Kiev, Izvestiya VUZ SSSR--Radioelektronika, No 9, 1972, pp 1154-1159

Abstract: The authors offer a simple method for optimizing binary quantum communications systems with direct use of the method of characteristic functions and the quasiclassical representation of optical fields. With the latter, a limited transition can be made into the classical region, based on the Glauber P-form in which the statistical operator of the radiation field can be written

$$\rho = \int P(\alpha) |\alpha\rangle\langle\alpha| d^2\alpha ,$$

where $P(\alpha)$ is a nonnegative function defined over the entire comp plane of α. A simple binary system consisting of a photodetector and a threshold device is examined for the analysis. The optimal operating conditions for such a system are found by determining the threshold number of photoelectrons for a signal and noise of specified power and statistics. Some particular examples of the

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USSR

UDC: 538.56:519.25

DERYUGIN, I. A., et al, Izvestiya VUZ SSSR--Radioelektronika, No 9, 1972, pp 1154-1159

optimization of binary systems for various signal and noise statistics are given. The authors find that the use of lasers in multimode operation degrades the characteristics of optical communications systems.

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USSR

UDC: 621.391.2.029.7

DERYUGIN, I. A., KURASHOV, V. N., and MASHCHENKO, A. I.

"Optical Amplification of Binary Signals in Communication Systems"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1618-1621

Abstract: Optimization of a system of binary signal communication, in which preamplification of the signal is obtained through a two-mode optical parametric amplifier to yield simple analytic solutions, is considered. The Bayes criterion of optimalness is used, and it is assumed that the correct solution corresponds to the situation of zero losses. In this optimized system, separation of the signal+noise and noise events is, as usual, made by an energy-sensitive receiver and a threshold device. The system characteristics then depend on the value of the threshold and the probability distribution of the appearance of photoelectrons at the detector output; this probability is determined by the statistical characteristics of the amplified signal. An expression for the threshold is obtained, and it is shown that the gain of the ideal noiseless amplifier for each pair of input signal power and noise values cannot exceed the difference between the initial

USSR UDC: 621.391.2.029.7

DERYUGIN, I. A., et al, Radiotekhnika i elektronika, No 8, 1972, pp 1618-1621

and asymptotic values of the error probability with fixed signal/noise ratio. It is noted that investigations of the effect of a parametric optical amplifier on detection characteristics can similarly be made for other signal and noise statistics.

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USSR

UDC 632.951

KUKHTA, Ye. P., MASHCHENKO, N. D., FOROSTYAN, Yu. N., and TSVETOVA, N. T., Crimean Agricultural Institute

"The Toxicity of a Number of New Amides of Phosphoric Acids for the Crimean Grape Snout Beetle"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 10, No 6, 1972, pp 40-43

Abstract: Laboratory and field tests were conducted to determine the toxicity of the new amides in comparison with known insecticides. In the laboratory test 50 beetles were placed in each of a number of Petri dishes, grape leaves were added for feed, then the insecticide being tested was applied in recommended concentrations. During the experiment the Petri dishes were placed in a cupboard with forced ventilation, to remove any fumigating effect. The temperature was maintained at 20-22° C and the humidity at 70-80%. In the laboratory tests the preparations gardona, cidial and metaphosphate of known insecticides, and the new compounds KF-4, KF-3 and KF-2 proved most effective. In the field tests the best results were obtained with cidial, metaphosphate, metathion, and the new compound KF-4. Dead beetles from each test were pulverized in porcelain crucibles and insecticide residue was collected along with other elements. Evidence of the precise action of the insecticides and the formation of choline was also found by this method.

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USSR

UDC 621.318.13:621.372.85

BEZMATERNYKH, L. N., SHVARTSMAN, G. I., MASHCHENKO, V. G., AFANAS'YEV, A. P., BOKOV, L. A., PROKHOPOV, A. R., ZAYTSEV, V. A., KUZHELEV, S. M.

"Controllable Delay Lines Based on Yttrium-Garnet Ferrite Rods"

V sb. Tonkiye magnitn. plenki, vychisl. tekhn. i radiotekhn. T. 2 (Thin Magnetic Films, Computer Technology and Radio Engineering--collection of works. Vol 2), Krasnoyarsk, 1971, pp 142-146 (from RZh-Radiotekhnika, No 11, Nov 71, Abstract No 11B190)

Translation: The paper presents the results of an experimental study on excitation and propagation of magnetoelastic and magnetostatic waves in yttrium-garnet ferrite rods as applied to their use in controllable delay lines. An analysis is made of relationships for delay time as a function of the external magnetic field when frequency is held constant, delay time as a function of frequency when the magnetic field is held constant, and total insertion losses as a function of delay time. The measurements were made in the frequency range of 560-3 800 MHz. Two illustrations, bibliography of eight titles. A. K.

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USSR

UDC 621.374.32

MASHCHIKHIN, G. V., CHUKAVIN, G. T., DERBENEV, P. V.

"A Magnetic Pulse Counter"

USSR Author's Certificate No 333711, filed 3 Aug 70, published 21 Apr 72 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 9, Sep 72, Abstract No 9A40 P)

Translation: This Author's Certificate introduces a magnetic pulse counter which contains a storage transformer with recording, readout, feedback, and output windings on a core with rectangular hysteresis loop, a slave squegging oscillator, and a transistorized recording circuit. To improve reliability and ensure stable operation of the counter over a wide range of temperatures, a resistor is connected in the emitter circuit of the transistor in the recording circuit, and an auxiliary stage is added which is based on a transistor in a common emitter circuit whose base is connected through a resistor and capacitor to the emitter of the recording transistor, and the collector of the additional transistor is connected through a commutating capacitor to the base of the transistor in the squegging oscillator. One of the ends of the record-

USSR

MASHCHIKHIN, G. V. et al., USSR Author's Certificate No 333711

ing winding is connected to the slide wire on a variable resistor connected in parallel with the power supply. A capacitor is connected between the slide wire of the variable resistor and the common line.

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USSR UDC: 621.373.42.029.64:621.385.64

MASHIN, B. G., SOKOLOV, I. V., VODYANITSKIY, V. I., ZHELOVENKOV, S. I.

"A Superhigh-Frequency Magnetron Oscillator"

USSR Author's Certificate No 270002, filed 1 Aug 67, published 13 Aug 70 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D353 P)

Translation: To improve the reliability of a magnetron microwave oscillator (see RZh-Radiotekhnika, 1968, 4D366), it is proposed that a full-wave rectifier consisting of two diodes and the secondary of an auxiliary transformer be connected in series with the windings of the electromagnet. At the instant of actuation of the oscillator, the primary winding of the auxiliary transformer is completely connected to the power supply terminals, but under operating conditions, a smaller part of it is connected across the line by means of a switch through the primary of the power transformer. One illustration. V. P.

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USSR

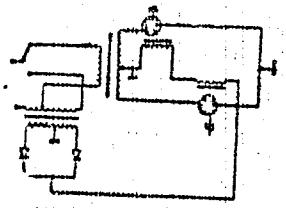
UDC 621.373.432

MASHIN, B. G., SOKOLOV, I. V., VODYANITSKIY, V. I., ZHERNOVENKOV, S. I.

"Superhigh-Frequency Magnetron Oscillator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16, 8 May 70, p 38. Patent No 270002. Filed 1 Aug 67

Translation: This Author's Certificate introduces a superhigh-frequency oscillator using magnetrons introduced by Author's Certificate No 198488. The new oscillator is distinguished by the fact that to improve its reliability, a double halfperiod rectifier is connected in series with the windings of the electromagnet. This rectifier contains two gates and the secondary winding of the auxiliary transformer, the primary winding of which on inclusion of the oscillator is completely connected to the circuit terminals; and in the operating mode, it is connected to its smaller section via the primary winding of the power transformer by a switch.



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USSR

UDC 577.15.016

DROZHEBNIKOV, V. A., GUBERNIYEV, N. A., RYBAKOV, N. I., RYZHOV, N. I., and MASHINSKAYA, T. YE., Scientific Research Laboratory of Experimental Immunobiology, Academy of Medical Sciences USSR, Moscow

"Investigation of Nuclease Activity of E. Coli (λ) After Exposure to Ultraviolet Light and Ionizing Radiation"

Moscow, Biokhimiya, Vol 36, No 5, 1971, pp 883-888

Abstract: The activities of endonuclease I, exonuclease III, and the phage-specific exonuclease of the lysogenic E. Coli K12 (gamma) strain were studied. After exposure to various doses of ultraviolet light 6.46 erg/mm^2/sec) and 645 MeV protons 60 rad/sec), induction of bacteriophages under these conditions was also investigated. Doses which evoke maximum induction of bacteriophages do not change the activity of either endonuclease I or endonuclease III. On the other hand, the activity of the phage-specific exonuclease is proportional to the induction of bacteriophages, reaching its maximum just prior to lysis of the irradiated cells. As a result, curves representing the lethal effects and bacteriophage induction caused by irradiation with ultraviolet light and with high energy protons have different shapes. After exposure to ultraviolet light, a spike-shaped maximum induction occurs at a dose of 250 erg/mm^2. After exposure to high energy protons, the induction

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USSR

DROZHERNIKOV, V. A., et al., Biokhimiya, Vol 36, No 5, 1971, pp 883-888

curve has a plateau extending from 50 to 100 Krad.

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USSR

UDC 577.15.016

DROZHENNIKOV, V. A., GUBERNIYEV, M. A., RYBAKOV, N. I., RYZHOV, V. I., and MASHINSKAYA, T. Ye., Scientific Research Laboratory of Experimental Immunobiology, Academy of Medical Sciences USSR

"Effect of Ultraviolet and Ionizing Radiation on E. coli K12 (λ) Nuclease Activity"

Moscow, Biokhimiya, No 5, 1971, pp 883-888

Abstract: The intensity of activity of endonuclease I, exonuclease III, and phage-specific exonuclease of E. coli K12 (λ) was studied after exposure to different doses of ultraviolet radiation and high-energy protons. The activity of the first two enzymes was not affected by ultraviolet radiation or high-energy protons at doses causing maximum induction of vegetative phage. The absence of an effect is attributed to the fact that these agents, unlike a chemical mutagen, such as mitomycin C, do not result in degradation of the ribosomes of the bacterial cell. The activity of exonuclease specific for phage λ was related to the degree of induction of vegetative phage, reaching a peak at the time of lysis of irradiated cells. Exonuclease activity at this time was much lower after the use of high-energy protons than after ultraviolet radiation. Analysis of the concentration of intracellular DNA

USSR

DROZHENNIKOV, V. A., et al., Biokhimiya, No 5, 1971, pp 883-888

and total protein in material not incubated after exposure to the inducing agents showed no change in these indexes.

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USSR UDC 591.488.4-135.044:597.82

VINNIKOV, Ya. A., GAZENKO, O. G., TITOVA, L. K., GOVARDOVSKIY, V. I., GRIBAKIN, F. G., BRONSHTEYN, A. A., PEVZNER, R. A., ARONOVA, M. Z., MASHINSKIY, A. L., PAL'MBAKH, L. R., IVANOV, V. P., TSIRULIS, T. P., KHARKEYEVICH, T. A., and PYATKINA, G. A., Laboratory of Evolutional Morphology, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

"Development of the Vestibular Apparatus (Labyrinth) of the Frog Rana temporaria in Weightlessness"

Leningrad, Zhurnal Evolyutsionnoy Biokhimii i Fiziologii, Vol 8, No 3, May/Jun 72, pp 343-350

Abstract: To study the effect of weightlessness on development of vertebrate vestibular apparatus, 43-hour artificially fertilized Rana temporaria eggs were subjected to a 40-hour flight in the Soyuz-10, after which they were fixed and observed with an electron microscope. Embryos in the early gastrula stage were used to ensure that takeoff acceleration was experienced prior to establishment of definitive vestibular apparatus, in light of evidence that acceleration does have considerable impact on receptor cell development at the later stages. Normal development proceeded to the tail bud stage during 1/2

USSR

VINNIKOV, Ya. A., et al., Zhurnal Evolyutsionnoy Biokhimii i Fiziologii, Vol 8, No 3, May/Jun 72, pp 343-350

the flight, as it did in control embryos, and no differences were detected in development of the presumptive otocysts and the eighth ganglion. Morphology is described in detail, the main feature being the beginning of differentiation of receptor and support cells in the presumptive otocysts and of bipolar neuroblasts in the eighth ganglion. Thus weightlessness has no effect on development in general and on differentiation of the future vestibular apparatus in frog embryos.

2/2

MASHINSKIY, A. L.

Radiation Biology

SO: JPRS 55100
4 FEB 72

UDC 592.282.232+576.852.29 (Hydrogenomonas):629.78

STUDY OF THE EFFECT OF FLIGHT FACTORS ON THE ZOND-8 AUTOMATIC STATION ON A CULTURE OF YEASTS AND ALGAL BACTERIA

[Article by E. A. Romanova, L. A. Maksimova, L. A. Siletskaya, A. L. Mashinskiy, Ye. A. Krasavin and V. K. Kovalenkova; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 6, 1971, submitted for publication 14 June 1971, pp 41-43]

All-(radiation biology)

Abstract: This paper gives the results of studying the yeast Candida tropicalis SK-4 and the bacterium Hydrogenomonas eutropha Z-1 which were aboard the automatic station Zond-8 during its lunar flight. The survival of yeast cells during flight and the physiological and biochemical properties of their subsequent generations remained unchanged. The survival of bacteria decreased by 5 percent in comparison with the control. Subsequent generations of bacteria tended to decrease their productivity during autotrophic cultivation, the level remaining within the limits of productivity variations under laboratory conditions. Bacterial radiosensitivity did not change after the flight.

In the biological experiments carried out earlier aboard Soviet and American spaceships and artificial earth satellites microorganisms were used for the most part as indicators for the biological dosimetry of cosmic radiation and commonly employed genetic objects (Jenkins; N. N. Zhukov-Verezhnikov, et al., 1962; [illegible], et al.; G. P. Parfenov and A. A. Lukin; N. N. Zhukov-Verezhnikov, et al., 1968).

During the period 20-27 October the Zond-8 automatic station, which flew around the moon on 24 October, carried a culture of the yeast Candida tropicalis SK-4 and a culture of Hydrogenomonas eutropha Z-1.

The selection of yeasts and Hydrogenomonas as objects for investigations aboard the Zond-8 was dictated by the need for studying the tolerance to spaceflight factors of microorganisms promising as biological objects for

1/2 030 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--RESOLUTION OF THE SIGNAL OF THE FIRST LEVEL CROSSING 3 PRIME2 P SUBTHREEHALVES IN SODIUM -U-

AUTHOR--MASHINSKIY, A.L.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK, 1970, 28(1), 201-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

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CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1968 STEP NO--UR/0051/70/028/001/0201/0203

CIRC ACCESSION NO--AP0125557

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--20NOV70

2/2 030

CIRC ACCESSION NO--AP0125557

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ATTEMPT WAS MADE TO ISOLATE THE SIGNAL OF THIS LEVEL BY FINDING THE DIFFERENCE BETWEEN 2 INTERFERENTIAL COMPONENTS OF FLUORESCENCE INTENSITY AS A FUNCTION OF THE MAGNETIC FIELD, OBTAINED BY USING EXCITATION LIGHT WITH VARYING RATIOS OF THE INTENSITIES OF THE HYPERFINE STRUCTURE COMPONENTS. THE EXPT. DID NOT GIVE RESOLN. OF D SUB2 AND D SUB1 LINES. AT HIGHER NA VAPOR CONCN. AND HIGH MAGNETIC FIELDS (SIMILAR TO 50 OE), THE POLARIZATION CHANGED ITS SIGN. DUE TO THE FARADAY EFFECT, THE PLAIN OF POLARIZATION ROTATED MORE THAN 45DEGREES, THE SPECEFIC ROTATION RANGE FOR A PURE HANLE EFFECT. CHANGING THE RELATIVE INTENSITIES OF THE HYPERFINE STRUCTURE COMPONENTS RESULTED IN CHANGES IN THE RATIOS OF THE SIGNALS OF THE 2ND AND 3RD LEVEL CROSSINGS. WHEN THE EXCITATION LIGHT DID NOT HAVE HYPERFINE STRUCTURE COMPONENTS WITH F EQUALS 2, THE SIGNAL OF THE 3RD TERM CROSSING DISAPPEARED.

UNCLASSIFIED

USSR

UDC 539.374

ILYUKOVICH, B. M., MASHINSKIY, V. V., TARNOVSKIY, I. YA., SKOROKHODOV, A. N.

"The Mechanics of Rolling L-Shaped Angles to Accurate Dimensions"

Tr. Ural'skogo politekhn. in-ta (Works of Ural'sk Polytechnical Institute), 1969, Collection 176, pp 112-116 (from RZh-Mekhanika, No 5, May 70, Abstract No 5V386)

[No abstract]

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UDC 615.916:546

USSR

MKHEYAN, E. YE., MASHINYAN, A. KH.

"Effect of Molybdenum and Copper on the Respiratory Process and Oxidizing Phosphorylation in the Mytochondria of the Liver of White Rats"

Zh. yeksperim. i klinich. med. (Journal of Experimental and Chemical Medicine), 1972, Vol 12, No 4, pp 29-34 (from RZh--Farmokologiya. Khimioterapevticheskiye Sredstva. Toksilologiya, No 3, Mar 73, Abstract No 3.54.648)

Translation: It is demonstrated that on internal administration of Mo in the amount of 20 and 100 mg/kg for 45 days, it causes noticeable disturbances of the respiratory tract which are exhibited in the form of intensification of respiration in the presence of adenosinediphosphoric acid and suppression of the efficiency of phosphorylation (the ADP/O factor drops). Simultaneous administration of Cu in the amount of 13 mg/kg leads to normalization of the detected disturbances which confirms the opinion of the favorable effect of Cu on the course of molybdenum toxicosis. The bibliography has 24 entries. USSR, Yerevan, Medical Institute.

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USSR

UDC 539.192/.194+535.33/.34.01

VARSHAVSKIY, YU. S., MASHIROV, L. G., SUGLOBOV, D. N.

"On the Possibilities and the Limitations of an Empirical Approach to an Analysis of Vibrational Spectra of Coordination Compounds"

V sb. Kolebatel'n. spektry v neorgan. khimii (Vibrational Spectra in Inorganic Chemistry -- Collection of Works), Moscow, "Nauka," 1971, pp 29-37 (from RZh-Fizika, No 5, May 71, Abstract No 5D134)

Translation: A critical discussion of the possibilities of an analysis of spectroscopic data on the basis of empirical correlations between spectroscopic characteristics of correlation compounds and their "chemical structure" is attempted. The meaning of the concept of characteristic frequencies underlying the empirical approach is discussed; it is shown that the use of this concept in no way restricts, in practice, the possibility of chemical interpretation of vibrational spectra of coordination compounds. Cases are discussed in which the absence of a characteristic nature contains important chemical information. From a comparison of the force constants obtained with the aid of approximate calculations with values found by an "exact" calculation it is concluded that the approximate calculations in many

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USSR

VARSHAVSKIY, Yu. S., et al, Kolebatel'n, spektry v neorgan, khimii

cases give applicable results. The empirical approach in the sense of volume, truth, and value of information achieved is not inferior to computational methods. Future promise of vibrational spectroscopy of coordination compounds is associated with the parallel, mutually enriching development of both approaches.

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USSR

UDC 621.355.8.035.2

KUZ'MIN, YU. A., MASHEVICH, M., UFLYAND, N. YU., and FROLOVA, F. P.

"The Influence of Cobalt on the Characteristics of the Nickel-Oxygen Laminar Electrodes, Operating in a Zincate Electrolyte"

Sb. rabot no khim. istochnikam toka. Vses. n.-n akkumulyator. in-t (collection of Works on the Chemical Source of Current. All-Union Scientific Study Institute for Storage Batteries), Vyp 7, 1972, pp 163-167 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8I245 by S. S. Levinson)

Translation: The possibility was examined for the construction of Nickel-Zinc batteries using a nickel-oxygen electrode having laminated structure with specific characteristics close to those of nickel-cadmium and nickel-iron batteries. The introduction of the 3% impurity of cobalt in the form of a solution of $CoSO_4$ into the active part of the cathode contributes to the increase in depth of discharge, and in long range cycles to the depth of discharge of the electrode, owing to which the time of operation of the batteries reached 70-80 cycles and the average voltage was 40% greater than the voltage of the nickel-cadmium and nickel-iron batteries.

1/1

1/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--SYNTHESIS OF IMIDOCARBOXYLIC ACIDS AND POLY,AMIDO IMIDES, BASED ON THEM -U-

AUTHOR-(03)-MASHKEVICH, S.A., ZHUBANOV, B.A., RAFIKOV, S.R.

COUNTRY OF INFO--USSR

SOURCE--TR. INST. KHIM. NAUK, AKAD. NAUK KAZ. SSR 1970, 28, 78-82

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IMIDE, CARBOXYLIC ACID, ORGANIC SYNTHESIS, POLYCONDENSATION, POLYMER, HEXAMETHYLENEDIAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1114 STEP NO--UR/0000/70/028/000/0078/0082

CIRC ACCESSION NO--AT0134800

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0134800

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SERIES OF POLY(TRIMELLITAMIDO IMIDES) (I) HAVING A M.P. 100-220DEGREES WAS PREPD. BY POLYCONDENSATION OF 4,CARBOXY,N,(OMEGA,CARBOXYDECYL)PHTHALIMIDE AND NH SUB2 (CH SUB2) SUB6 NH SUB2 (II), P OR M,XYLYLENEDIAMINE. ALTERNATIVELY, INTERFACIAL POLYCONDENSATION OF 4,CARBOXY,N,(P,CARBOXYPHENYL)PHTHALIMIDE AND II GAVE A NO. OF STABLE I (TO 300-85DEGREES).

UNCLASSIFIED

USSR

UDC: 621.375.82

YEFIMENKO, L. V. and MASHKEVICH, V. S.

"Theory of Two-Channel Laser Oscillation in Spectrally Heterogeneous Media"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, No 5, 1973, pp 756-771

Abstract: It is noted that spectra of multichannel laser oscillation in the case of heterogeneous broadening of the luminescence lines still represent an unsolved problem. The purpose of this paper is to help remedy this defect. It sets up a theory of oscillation and obtains an oscillation spectrum for two transitions with the total upper level of operation for the case in which there is no correlation between the various frequencies of the individual active center. An analysis of the various modes of oscillation is provided and the conditions of their realization are found. As an example of the analysis provided by the authors, the glass laser activated by neodymium is considered. The authors emphasize that their views relate to cases in which there is no correlation between the different frequencies of the individual active center.

1/1

USSR

UDC 539.239.28

MASHKEVICH, V. S., SHADCHIN, Ye. A., Institute of Physics, Academy of Sciences of the UkrSSR

"Theory of Cross Relaxation Induced by Resonance Transfer of Excitations in a Spectrally Nonhomogeneous Medium"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 17, No 10, Oct 72, pp 1667-1674

Abstract: The authors consider the transfer of excitations by resonance interaction in a system of two-level impurity centers in which the elementary excitations are excited states of the centers. An equation is derived for cross relaxation with respect to the spectral density of the excitations. The final relaxation equation takes a form which differs appreciably from the conventional phenomenological equation. A solution is found for the equation in the case of considerable nonhomogeneous broadening. The equation is derived from microscopic equations describing elementary acts of transfer of excitations. It is found that the process of relaxation of the spectral density to its equilibrium value is non-exponential.

1/1

USSR

UDC 539.2

MASHKEVICH, V. S., and SHADCHIN, Ye. A., Institute of Physics of the Academy of Sciences UkrSSR, Kiev

"Spectral Equations for a System of Quasi-Two-Level Centers and Emission Modes"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 17, No 3, Mar 72, pp 397-407

Abstract: A spectral theory is developed for a system consisting of quasi-two-level centers and emission modes. Spectral distributions for modes of the electric field and center levels act in the capacity of dynamic variables. On the basis of spectral representation and with the help of correlation functions of the mode and the center and using their Fourier presentations, the authors derive equations characterizing the above-mentioned distributions and expressions for the modes and the levels. The solutions of the deduced functions were found by a previously described method by V. S. Mashkevich in the symposium "Kvantovaya Elektronika" (Kiev, "Naukova Dumka," Vol 5, 1971, p 131). Forty-four formulas, six bibliographic references.

1/1

USSR

UDC 621.375.82

GODENKO, L. P. and MASHKEVICH, V. S., Institute of Physics, Academy of Sciences, Ukrainian SSR, Kiev

"Laser Generation Theory for a Nonuniformly Broadened Asymmetric Luminescence Line"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 8, Aug 71, pp 1257-1266

Abstract: One of the most important areas in laser physics is the study of generation in spectrally nonuniform systems. The authors had previously studied a model where the amplification was a symmetric function of frequency and where naturally the spectrum of the generation was also symmetric. Taking advantage of a later investigation the authors; in this article, develop a theory of generation wherein they are not confined to this symmetric generation but are able to explore the possibilities of asymmetric amplification. They describe the system involved and discuss the method used to solve it, employing equations as graphic substantiation. They then describe the sources of asymmetry and weak generation with an even distribution of centers, as well as an asymmetric Lorentz line of the center. In discussing the generation spectrum, they mention single-line and double-line generation as well as the onset of triple-line generation. Finally the authors define the parameters

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201930008-6"

USSR

GODENKO, L. P. and MASHKEVICH, V. S., Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 8, Aug 71, pp 1257-1266

and discuss the means of determining them for the asymmetric case. The article contains 1 figure and 5 bibliographic entries.

2/2

USSR

UDC 621.375.82

GORENKO, L. P., and MASHKEVICH, V. S.

"Form of Amplification Curve in Systems With Unevenly Expanded Luminescence Line"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 15, No 12, Dec 70, pp 2075-2077

Abstract: This work presents a quantitative analysis of the form of the amplification curve of a laser with stable generation, based on the results of an earlier work, in a system of four-level impurity centers with an unevenly expanded luminescence line. The amplification is shown in figures as a function of frequency for single, double, and triple mode generation.

1/1

1/2 036 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--THEORY OF LASER EMISSION WITH TWO CRYSTALS IN THE RESONATOR -U-

AUTHOR--MASHKEVICH, V.S.

COUNTRY OF INFO--USSR

SOURCE--UKRAINS'KII FIZICHNII ZHURNAL, VOL. 15, MAR. 1970, P. 395-404

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER EMISSION, CRYSTAL ORIENTATION, LASER PUMPING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0558 STEP NO--UR/0185/70/015/000/0395/0404

CIRC ACCESSION NO--AP0121230

UNCLASSIFIED

2/2 038 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0121230

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DEVELOPMENT OF A THEORY FOR STEADY STATE LASER EMISSION IN THE CASE WHERE THE RESONATOR CONTAINS TWO CRYSTALS IN A ROW, DIFFERING IN THE ORIENTATION OF THEIR OPTICAL AXES. A SPATIALLY HOMOGENEOUS CASE IS CONSIDERED WHERE ONLY TWO MODES OF IDENTICAL FREQUENCY BUT DIFFERENT POLARIZATION ARE EMITTED. CRYSTAL PUMPING VALUES ARE DETERMINED WHICH CORRESPOND TO ONE AND TWO MODE EMISSIONS. THE MUTUAL EFFECTS OF THE CRYSTALS ARE EXAMINED AND SHOWN TO INVOLVE CHANGING QUANTUM YIELDS DURING TRANSITION FROM EMISSION ON SEPARATE CRYSTALS TO JOINT EMISSION ON BOTH CRYSTALS. FACILITY: AKADEMIIS ANUK UKRAINS'KOI RSR, INSTITUT FIZIKI, KIEV, UKRAINAIN SSR.

UNCLASSIFIED

M

UDC: 621.375.82

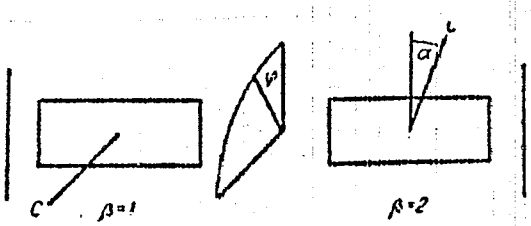
USSR

MASHKEVICH, V. S., Institute of Physics of the Ukrainian Academy of Sciences, Kiev (Institut fiziki AN U..R, Kiyev)

"Theory of Laser Generation with Two Crystals in the Resonator"

Kiev, Ukrayinskiy Fizicheskiy Zhurnal, Vol 15, No 3, March 1970, pp 396-404

Abstract: The author develops a theory of laser generation for the case of two crystals differing in orientation of their optical axes in a resonator. A schematic representation of the system is given (see figure),



where β = 1, 2 is the crystal number, and C is the optic axis. The optical axis of the first crystal is perpendicular to the axis of the resonator, while the optical

USSR

MASHKEVICH, V. S., Ukrayinskiy Fizicheskiy Zhurnal, Vol 15, No 3, March 1970, pp 396-404

axis of the second crystal is at an angle of $\frac{\pi}{2} - \alpha$ to the resonator axis. The angle φ characterizes the electric vector direction of the axial mode. Two-mode and single-mode generation are considered individually. This method was adopted on the basis of work done by G. Yu. Buryakovskiy and V. S. Mashkevich. Pumping diagrams are given and single-and double-mode areas of generation are determined. The mutual effect of crystals is considered. A relation is established for quanta yields of two-crystal and single-crystal generation. Experimental results show that transition to simultaneous two-crystal generation raises quanta output for mode 0 and decreases it for mode $\frac{\pi}{2}$.

2/2

USSR UDC: 621.315.592

VLASOV, G.K. and MASHKEVICH, V.S.

"Theory of Laser Oscillation With Indirect Magnetooptical Transitions in Which Free Carriers Participate"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 4, No 4, 1970, pp 663-668

Abstract: Laser oscillation in a quantizing magnetic field has already been investigated for direct and indirect zone-zone transitions with the participation of phonons, where the effect of the magnetic field is marked. An even greater effect can be expected for indirect transitions in which free carriers take part. Beginning with the kinetic theory of lasers, this article investigates this latter situation by considering a uniform semiconductor with thermodynamic equilibrium in each of its zones. The authors limit themselves to the case of simple spherical zones with parabolic dispersion, and do not take into account spin splitting in the magnetic field. They assume that the majority carrier concentration is sufficiently large even without pumping, which permits them to neglect the connection between the concentration and the pumping. They investigate the Boltzmann distribution of carriers in a doped semiconductor, and determine the oscillation frequencies and the Fermi quasi-level of minority carriers during laser oscillation. A curve showing the oscillation frequency as a function of the magnetic field for n and p is given.

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USSR

VLASOV, G. K.; MASHKEVICH, V. S.; TIMONINA, Ye. A. (Institute of Physics, Ukrainian Academy of Sciences, Kiev)

"Light Absorption by Free Carriers Caused by Interaction Among Them"

Leningrad, Fizika Tverdogo Tela; November, 1972; pp 3397-3404

ABSTRACT: The intrazonal absorption of light in a semiconductor, in which the scattering is caused by electron-electron or electron-hole interaction, is studied. The absence of light absorption due to the interaction of any number of carriers of one sign in all orders of the theory of perturbation under a parabolic law of dispersion is proved. In the second order of the theory of perturbation expressions are obtained for the absorption coefficient: (1) due to the interaction of carriers of one sign under a nonparabolic law of dispersion; (2) due to electron-hole interaction.

In actual cases the spectral absorption coefficient resulting from the above mechanisms has a value of 2.5 to 3.5.

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USSR

MASHKEVICH, V. S., SHADCHIN, Ye. A., Institute of Physics, Academy of Sciences of the UkrSSR, Kiev

"On Cross Relaxation in a Spectrally and Spatially Nonhomogeneous Medium"

Leningrad, Fizika Tverdogo Tela, Vol 15, No 2, Feb 73, pp 645-647

Abstract: The authors consider transmission of excitations in a system of two-level impurity centers. The excited states of the centers are the elementary excitations. An equation is derived for the spectral density of excitations, and cases in which the dipole moments of transitions of all centers are collinear and all directions of transitions are equally probable are considered. Analysis of the results shows that migration of excitations in a spatially nonhomogeneous system is accompanied by polarization ("migration polarization").

1/1

1/2 020 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--PRECANCER DISEASES OF THE LIPS AND BUCCAL MUCOSA -U-

AUTHOR--MASHKILLEYSON, A.L.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 4, PP 22-28

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ORAL DISEASE, CANCER, HISTOCHEMISTRY, PATHOGENESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0565 STEP NO--UR/0206/70/000/004/0022/0028

CIRC ACCESSION NO--AP0108780

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0108780

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERE WERE 840 PATIENTS WITH DIFFERENT FORMS OF PRECANCER OF THE RED BORDER OF THE LIPS AND BUCCAL MUCOSA UNDER OBSERVATION. NEW CLINICO MORPHOLOGICAL FORMS, NEW CLINICAL AND MORPHOLOGICAL VARIETIES OF THE ALREADY KNOWN FORMS OF PRECANCER OF THIS AREA ARE DESCRIBED. RESULTS OF HISTOCHEMICAL STUDIES OF PRECANCER DISEASES AND RESULTS OF STUDIES OF THEIR PATHOGENESIS ARE PRESENTED. CLASSIFICATION OF PRECANCER DISEASES OF THE LIPS AND BUCCAL MUCOSA AND TACTICS OF THERI TREATMENT AND PREVENTION HAVE BEEN DEVELOPED.

FACILITY: KAFEDRA KOZHNYKH I VENERICHESKIKH BOLEZNEY MOSCOW MEDITSINSKOGO STOMATOLOGICHESKOGO INSTITUTA.

UNCLASSIFIED

USSR UDC 8.74

MASHKINA, R. V., PRACHENKO, V. D., SERGIYENKO, I. V., SEMIK, V. P., TUKALEVSKAYA, N. I.

"Automated Information Servicing and Data Processing Systems for a Library of Algorithms and Programs. Part I"

Avtomatizirovannaya sistema informatsionnogo obsluzhivaniya i obrabotki dannykh fonda algoritmov i programm. Ch. I (cf. English above), Kiev, Cybernetics Institute of the Ukrainian SSR Academy of Sciences, 1972, 204 pp, ill., 60 k. (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V472 K)

Translation: An automated information servicing and data processing system for an algorithm and program library on a computer, its program and information servicing and also the operating procedures for this system are described. In the first chapter the basic problems of developing the system, the steps in its creation and its operating conditions are discussed, and one method of combining the principles of universality and specialization providing the basis for the construction of the system is described. In the second chapter there is a description of the shape of the input and output documents of the system and the structure of the user-system communication language. The third chapter is devoted to a discussion of means of describing the system: the language of the data flow diagrams, the block-system language and the operating address

USSR

MASHKINA, R. V., et al., Avtomatizirovannaya sistema informatsionnogo obsluzhivaniya i obrabotki dannykh fonda algoritmov i programm. Ch. I, Kiev, Cybernetics Institute of the Ukrainian SSR Academy of Sciences, 1972, 204 pp, ill., 60 k.

language for description of the system procedures. In the fourth chapter the program library for the system and the structure of its information files are described by the means discussed in the third chapter. The fifth chapter contains the problems of introduction and maintenance of the system.

2/2

USSR UDC 8.74

MASHKINA, R. V., PRACHENKO, V. D., SERGIYENKO, I. V., SEMIK, V. P., TUKALEVSKAYA, N. I.

"Automated Information Servicing and Data Processing Systems for a Library of Algorithms and Programs. Part II"

Avtomatizirovannaya sistema informatsionnogo obsluzhivaniya i obrabotki dannykh fonda algoritmov i programm. Ch II (cf. English above), Kiev, Cybernetics Institute of the Ukrainian SSR Academy of Sciences, 1972, 208 pp, ill., 60 k. (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V473 K)

Translation: The allocation of the system software on the information carriers and the software for the Dnepr-2 computer are presented.

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USSR

UDC 536.46:533.6

MERZHANOV, A. G., GAL'CHENKO, Yu. A., GRIGOR'YEV, Yu. M., MASHKINOV, L. B.

"Ignition of an Aluminum Wire"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 245-249 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B941)

Translation: The ignition of an aluminum wire in a pure hydrogen flow at atmospheric pressure was studied by an electrothermographic method. The ignition temperatures and the critical electrical powers were determined as a function of the rate of flow of the gas and the diameters of the wires. The ignition parameters were determined as a function of the initial thickness of the oxide film on the wire for different methods of application. 7 ref. Authors' abstract.

USSR

UDC 548.12:539.893

VOLOSHIN, V. A. (Academician, Academy of Sciences Ukrainian SSR), GALKIN, A. A., MASHKOV, L. K. (Donets Physical Technical Institute, Academy of Sciences, Ukrainian SSR)

"Increase in Luminescence Center Symmetry of Europium Benzoylacetone Under Omnidirectional Compression"

Moscow, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol. 188, No. 1, pp 64 + 1 photograph

Abstract: Polycrystalline europium benzylacetone under compression of 0 to 10 kbar is investigated. At normal pressure the $^7F_1$ level has 3 components not equidistant from each other. Symmetry is triclinic or monoclinic, and splitting is determined by fourth-order terms. The six oxygen molecules around the europium ion form a regular octahedron. Departure from cubic symmetry is due to the second sphere (chiefly the CH_3 and C_6H_5 groups).

As pressure is increased, the two closer lines merge practically into one (at 10 kbar). Splitting of the $J = 2$ level into two components corresponds to 1/2

USSR

VOLOSHIN, V. A., et al., Doklady Akademii Nauk SSSR, Vol. 188, No. 1, pp 64 + 1 photograph

higher (tetragonal, hexagonal) symmetry. This indicates that energy from the pressure acted to increase the symmetry. The process is reversible. It is assumed that cubic symmetry cannot be achieved at normal pressure because of chemical structural asymmetry, and therefore elevated pressure increases the splitting of the $^7F_1$ level. In the opposite case all components merge into a single, triply degenerate line.

Orig. art. has 1 fig.

2/2

USSR UDC 621.396.677:621.396.967

MASHKOV, N. A.

"A Method for Optimizing the Directional Diagram of a Radio Relay Line Antenna Grating"

Tr. Mosk. energ. in-ta (Transactions of the Moscow Power Institute) No 117, 1972, pp 25-30 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10B21)

Translation: The current distribution in radio relay line antenna gratings which is optimal by the criterion of maximum signal/noise ratio is determined together with the directional diagram of the grating. The noise power is used as the initial data. Bibliography of four. N. S.

1/1

1/2 038 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--INFLUENCE OF DIAMOND BURNISHING ON THE QUALITY OF CHROMIUM COATINGS -U-

AUTHOR-(03)-METELKIN, A.F., KHVOROSTUKHIN, L.A., MASHKOV, V.N.

COUNTRY OF INFO--USSR

SOURCE--MASHINOSTROENIE, NO. 3, 1970, P. 147-151.

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS

TOPIC TAGS--DIAMOND, CHROMIUM, METAL COATING, SURFACE PROPERTY, WEAR RESISTANCE, METAL POLISHING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1400 STEP NO--UR/0418/70/000/003/0147/0151

CIRC ACCESSION NO--AP0130358

UNCLASSIFIED

2/2 038 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0130358

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF THE CHARACTERISTICS FEATURES OF DIAMOND BURNISHING AND ITS INFLUENCE ON THE WEAR RESISTANCE AND CONTACT ENDURANCE OF CHROMIUM COATINGS. AN ANALYSIS OF THE GEOMETRICAL SURFACE QUALITY PARAMETERS LEADS TO RELATIONS BETWEEN THE TRANSVERSE AND LONGITUDINAL SURFACE ROUGHNESSES AND THE BURNISHING CONDITIONS. EXPERIMENTAL DATA CONCERNING SURFACE HARDENING AND RESIDUAL STRESSES INDUCED IN THE SURFACE LAYER BY DIAMOND BURNISHING ARE EXAMINED. THE SUPERIORITY OF A DIAMOND BURNISHED CHROMIUM COATINGS OVER COATING SUBJECTED TO OTHER TYPES OF SURFACE TREATMENT IS DEMONSTRATED.

UNCLASSIFIED

USSR

UDC 669.71.053.24(088.8)

KHITRIK, S. I., GASIK, M. I., VUKOLOV, YE. A., KLEKOVICH, N. A., PORADA, A. N., LAGUNOV, YU. V., POLONSKIY, S. M., IORDANOVA, Z. A., MALYSHEV, V. I., YEMLIN, B. I., KASHKUL', V. V., MASHKOV, V. P. TSEYMAKH, N. L., YEM, A. P., CHERNYSH, F. I., and KOLNOGUZENKO, V. A., Dnepropetrovsk Metallurgical Institute

"Method of Smelting Abrasive Electrolytically Produced Corundum"

USSR Author's Certificate No 263635, filed 15 Oct 65, published 10 Jun 70 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G101 P)

Translation: A method is proposed for smelting abrasive electrolytically produced corundum in a thermal furnace which involves deep fusion of alumina-containing charge with reducing agents. To increase the abrasive properties of corundum and to obtain in it a Ti oxide content of $\leq 1\%$, smelting is carried out on kaolin presintered with Fe-ore additive or scale in the amount of 20-30 wt % of the charge.

1/1

MASHKOV, V.S.

MEDICINE

13. USSR

"State Hydrological Institute"

Moscow, Pravda, 18 Feb 71, p 6

Translation: How much water is there in the Amu Dar'ya River? A comprehensive expedition from the State Hydrological Institute is to provide an answer to this question, which, for farmers, is far from an idle one.

The researchers will measure the flow of water and determine how much water is evaporated from the surface of the river and the backwater areas, overgrown with reeds and taiga vegetation, that line the main channel.

1/1

14. USSR

"Tadzhik Medical Institute"

Moscow, Meditsinskaya Gazeta, 7 Apr 71, p 8

V. S. Mashkov -- assistant of the Chair of Social Hygiene

1/1

1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--CHARACTERISTICS OF FRONTAL ZONES DURING THE COLD TIME OF THE YEAR AGAINST OBSERVATIONS AT A 300 METRE HEIGHT METEOROLOGICAL -U-

AUTHOR-(02)-MASHKOVA, G.B., MATKOVSKIY, B.M.

COUNTRY OF INFO--USSR

SOURCE--METEOROLOGIYA I GIOROLOGIYA, 1970, NR 6, PP 48-55

DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--METEOROLOGIC TOWER, ATMOSPHERIC FRONT, ATMOSPHERIC TEMPERATURE, ATMOSPHERIC HUMIDITY, ATMOSPHERIC WIND, WIND VELOCITY, WIND DIRECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1776 STEP NO--UR/0050/70/000/006/0048/0055

CIRC ACCESSION NO--AP0125392

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0125392

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF EXPERIMENTAL INVESTIGATIONS OF ATMOSPHERE FRONT STRUCTURE AT THE LOWER 300 METRE LAYER OF THE ATMOSPHERE ARE GIVEN. SOME METEOROLOGICAL CHARACTERISTICS OF FRONTAL ZONES SUCH AS WIDTH AND SLOPE OF THE FRONTAL ZONE ARE SHOWN, AND A TREND OF TEMPERATURE, HUMIDITY, WIND VELOCITY AND DIRECTION ONE HOUR BEFORE AND ONE HOUR AFTER PASSAGE OF FRONTS ARE GIVEN.

FACILITY: INSTITUT EKSPERIMENTAL'NOY METEOROLOGII.

UNCLASSIFIED

USSR

UDC 621.791:539.378:061.3

[redacted] and KAZAKOV, V. N., Engineers

"VII All-Union Scientific-Technical Conference on Diffusion Welding in a Vacuum"

Moscow, Svarochnoye Proizvodstvo, No 7, Jul 1972, pp 60-61

Abstract: The VII All-Union Conference on diffusion welding was held in Moscow 25-27 January, 1972. The conference was attended by some 500 representatives of various cities of the country, as well as specialists from the GDR, Czechoslovakia, Poland, and Yugoslavia. Over 60 reports were heard on problems of joining of heat resistant, refractory, and porous metals and alloys, as well as nonmetallic materials such as graphite, sapphire, glass, and ceramics with metals. The Deputy Minister for Higher and Specialized Secondary Education of the RSFSR, Candidate of Technical Sciences A. M. Kutepov, opened the conference, and noted that the method of diffusion joining of metallic and nonmetallic materials is being ever-more widely used in various branches of the national economy. Over 500 organizations and enterprises are using diffusion welding in a vacuum, joining over 400 different pairs of materials. Subjects covered by reports heard at the conference included: the contemporary status and problems of diffusion welding; the

USSR

MASHKOVA, N. A. and KAZAKOV, V. N., Svarochnoye Proizvodstvo, No 7,Jul 72, pp 60-61

electron mechanism of interaction during diffusion welding of retractory metals; development of the stage of volumetric interaction during diffusion welding of dissimilar materials; the significance of surface energy in the formation of joints by diffusion welding; problems of the mechanism of formation of joints for diffusion welding of similar metals; the influence of surface diffusion on mass transfer during diffusion welding; the influence of technological parameters of diffusion welding on diffusion processes in the contact zone; the properties of bimetallic joints between stainless steel and electrolytic nickel; the influence of the temperature of diffusion welding on changes in the boundary zone of the bimetal; diffusion metallurgy as a new method of producing composite materials; improvement of the vacuum-mechanical characteristics of structural materials by heat treatment in a vacuum; problems of the theory and technology of joining of nonmetallic materials with metals; production of metal ceramic insulators; diffusion intergrowth of copper with aluminum alloys over large surfaces; manufacture of cutting tools and stamps by diffusion welding in a vacuum; and the experience gained in diffusion-vacuum welding of various specific products. The conference discussed the reports heard and adopted a resolution directed toward further development of science and technology in the area of diffusion-vacuum welding, and approved a plan for scientific research, planning-design, and technological work for 1972-1975.

2/2

MASHKOVICH, S. A.

UDC 551.509.313

...RICAL EXPERIMENTS WITH RESPECT TO FOUR-DIMENSIONAL OBJECTIVE ANALYSIS ON ...E BASIS OF THE SPECTRAL FORECASTING MODEL

[Article by Professor S. A. Mashkovich, Candidate of Physical and Mathematical ...ences I. G. Veyl', USSR Hydrometeorological Scientific Research Center; ...scow, Meteorologiya i Gidrologiya, Russian, No 3, 1972, submitted 18 November 1971, pp 3-15]

A "continuous scheme" for mastery of asynoptic data by means of the baratropic spectral model is formulated. The calculations were performed for simulated data on the state of the atmosphere. The experimental results indicate the expediency of this approach to four-dimensional analysis.

The progress in the development of numerical models of general atmos...eric circulation and progress in applying hydrogenetic methods to the problem ...long-range forecasting indicate defined prospects for further improvement ...long-range numerical forecasts. However, on the path of development of ...drodynamic long-range forecasts there are a number of obstacles among which ...e deficiency of information on the state of the atmosphere is highly signifi...ant.

The research performed [5, 6, 9, and so on] shows that as a result of ...reliability of the initial data, for defined errors in it the forecast can ...essentially distorted for 1-3 weeks (depending on the properties of the ...forecasting model).

The initial information encompassing the Northern Hemisphere of the ...arth is required for forecasts on the order of a week.

In addition, significant territories of the Northern Hemisphere are ...orly covered by observation data (a quantitative estimate of the data deficit ...in the Northern Hemisphere can be found, for example, in [1]). In the Southern Hemisphere, situation is more lamentable. The studies of the required ex...pansion of the aerological network [1, 7] show that for satisfactory represen...tation of the field of such a comparatively smoothly varying meteorological ...element in space has the geopotential of the isobaric surface it is desirable to ...have tens and even hundreds of stations in the Northern Hemisphere. Of course,

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VIKTOROV, A. A., MASHKOVICH, V. P.

"Gamma Radiation Accumulation Factors of Flat Sources for Two-Layered Heterogeneous Barriers"

V sb. Vopr. dozimetrii i zashchity ot izluch. (Problems of Dosimetry and Radiation Shielding—collection of works), vyp. 12, Moscow, Atomizdat, 1971, pp 107-111 (from RZh-Fizika, No 4, Apr 72, Abstract No 4A724)

Translation: The paper presents the results of a study of the energy accumulation factors for two-layered heterogeneous barriers exposed to flat unidirectional and isotropic sources of gamma radiation in the range of energies E_0 from 0.5 to 7-10 MeV. The accumulation factors were determined both experimentally, for gamma radiation energies $E_0 = 0.662$, 1.25, and 2.75 MeV, and also theoretically by a semi-empirical method based on using the accumulation factors in homogeneous barriers for flat sources of gamma radiation, with angular distribution of quanta in the range of source radiation energies of $0.661 \leq E_0 \leq 7$ MeV. Essentially, the semi-empirical method consists in determining the intensity of gamma radiation behind the second layer of the heterogeneous barrier exposed to an equivalent surface source of radiation formed behind the first layer exposed to the primary flat isotropic source. M. L.

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BOLYATKO, V. V., LIPUNOV, A. D., MASHKOVICH, V. P., SUVOROV, A. P., TSYPIN, S. G.

"Attenuation of Soft-Spectrum Neutrons in Continuous Shields"

V sb. Vopr. dozimetrii i zashchity ot izluch. (Problems of Dosimetry and Radiation Shielding--collection of works), vyp. 12, Moscow, Atomizdat, 1971, pp 142-146 (from RZh-Fizika, No 4, Apr 72, Abstract No 4A727)

Translation: Soft-spectrum neutron propagation is studied in serpentine ore on an experimental installation -- an intermediate neutron converter. Serpentine ore is used as a filler in concrete, and sometimes independently as a shielding material. The resultant experimental data on the spatial distribution of neutrons of various energies in serpentine ore agree well with the results of calculation done by the ROZ-1 computer program using a specially compiled system of multigroup neutron constants. Only a slight difference is observed in the relative attenuation of the neutron flux density for measurements by resonance indicators. M. L.

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